

ESSENTIAL BUILDING BLOCKS FOR EFFECTIVE MONITORING



Colorado River Watch



EPA's
National Advisory Council
for Environmental Policy
and Technology =
NACEPT COMMITTEE



Water Data Collaborative

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TOP CHALLENGES FOR VM/CS

1. Volunteer
Recruitment or
Retention
2. Data Not Used
3. Consistent
Resources

TOP AGENCY CHALLENGES WORKING WITH VM/CS

1. Communication
2. Beliefs –
Experience
3. Resources or
Capacity

A CLOSER LOOK AT THE PROBLEM

NOT RESOURCES

**Effective and Appropriate
Study Design or Monitoring Plan**

**Not generating, delivering or
communicating information**

No Evaluation

More

Alignment
Information

Difference
and Be

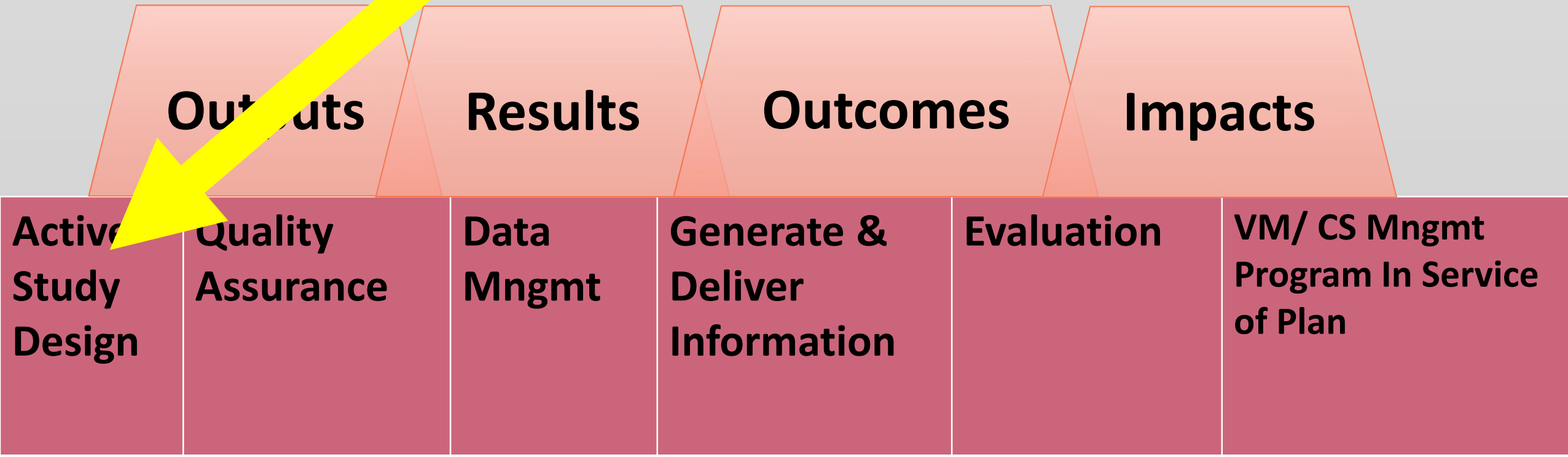
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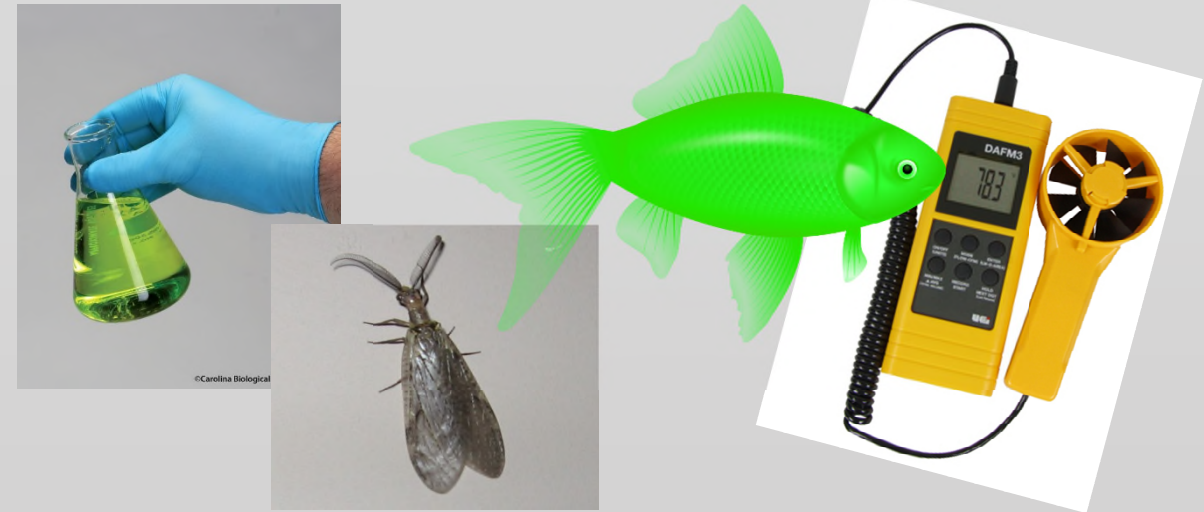
EFFECTIVE MONITORING PROGRAMS

Produce Measurable, trackable or identifiable:

ESSENTIAL BUILDING BLOCKS



ORGANIZATION TYPE



DATA USES OR USERS

NOT ALL DESIGNS OR PLANS ARE EQUAL

DURATION

RIGOR

RESOURCES

QUALITY

COMPLEXITY

FORMALITY

Each Monitoring ?

Continuum of Study Purposes

Condition /Trend – Impact – Effectiveness – Use Support

Continuum of Uses or Management Decisions

Education – Inquiry – Advocacy – Planning – Regulatory - Legal

Continuum of Users

Youth, Adults, Farmers, Managers, Districts, Local G, State G, Fed G

Continuum of ROI's

Behavior Change-Use's Met-Regulation-Policy-Health-Economy

Data
Pathway

Or
Information
Blue Print

Info needs &
Products

Evaluation

**MONITORING
QUESTION 1:**

Study Purpose(s)				
		I	II	III
A. Condition and Trend Investigation				
B. Impact Investigation	Non Point Source			
	Point Source			
C. Effectiveness Investigation				
D. Use Support Investigation				

**MONITORING
QUESTION 1:**

**Are Rivers
Healthy?**

Study Purpose(s)				
		I	II	III
A. Condition and Trend Investigation				
B.Impact Investigation	Non Point Source			
	Point Source			
C. Effectiveness Investigation				
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**MONITORING
QUESTION 1:**

**Are Rivers
Healthy?**

		Data Uses, Decisions or Management Uses		
Study Purpose(s) Use(s)		I Education/ Community Inquiry	II Community or Agency Advocacy/ Planning	III Regulatory/ Legal
A. Condition and Trend Investigation 1.???				
B. Impact Investigati on	Non Point Source			
	Point Source			
C. Effectiveness Investigation				
D. Use Support Investigation				

MONITORING
QUESTION 1:

Are Rivers
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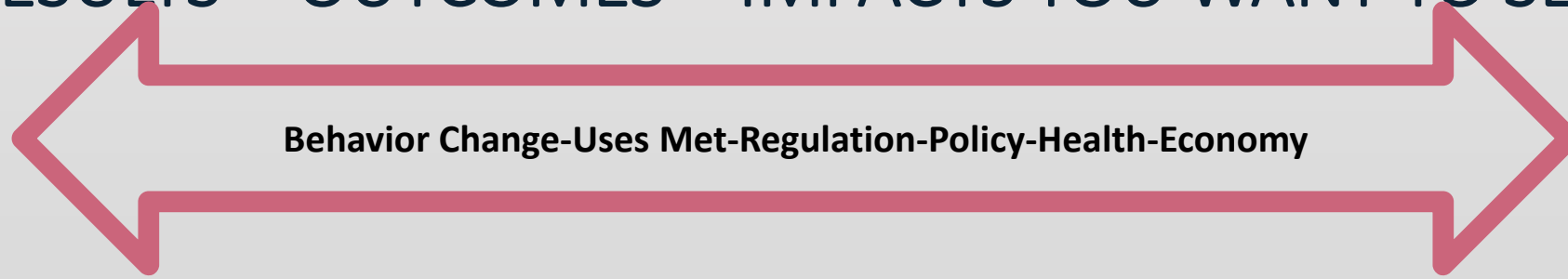
		Data Uses, Decisions or Management Uses		
Study Purpose(s) Use(s)		I Education/ Community Inquiry	II Community or Agency Advocacy/ Planning	III Regulatory/ Legal
A. Condition and Trend Investigation 1.???		RW VOLUNTEERS	CWA AGENCY	
2.???			WS GROUPS	
B. Impact Investigati on	Non Point Source			
	Point Source			
C. Effectiveness Investigation				
D. Use Support Investigation				

MONITORING
QUESTION 1:

Are Rivers
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A. Condition and Trend Investigation 1.???		<i>RW</i> <i>VOLUNTEERS</i>	<i>CWA AGENCY</i> <i>WS GROUPS</i>	<i>CWA AGENCY</i>
B. Impact Investigati on	Non Point Source		<i>CWA AGENCY</i>	
	Point Source			
C. Effectiveness Investigation				
D. Use Support Investigation				

RESULTS - OUTCOMES – IMPACTS YOU WANT TO SEE:



- Because you answered that monitoring question
- Specific to these data users/decisions/management uses and users

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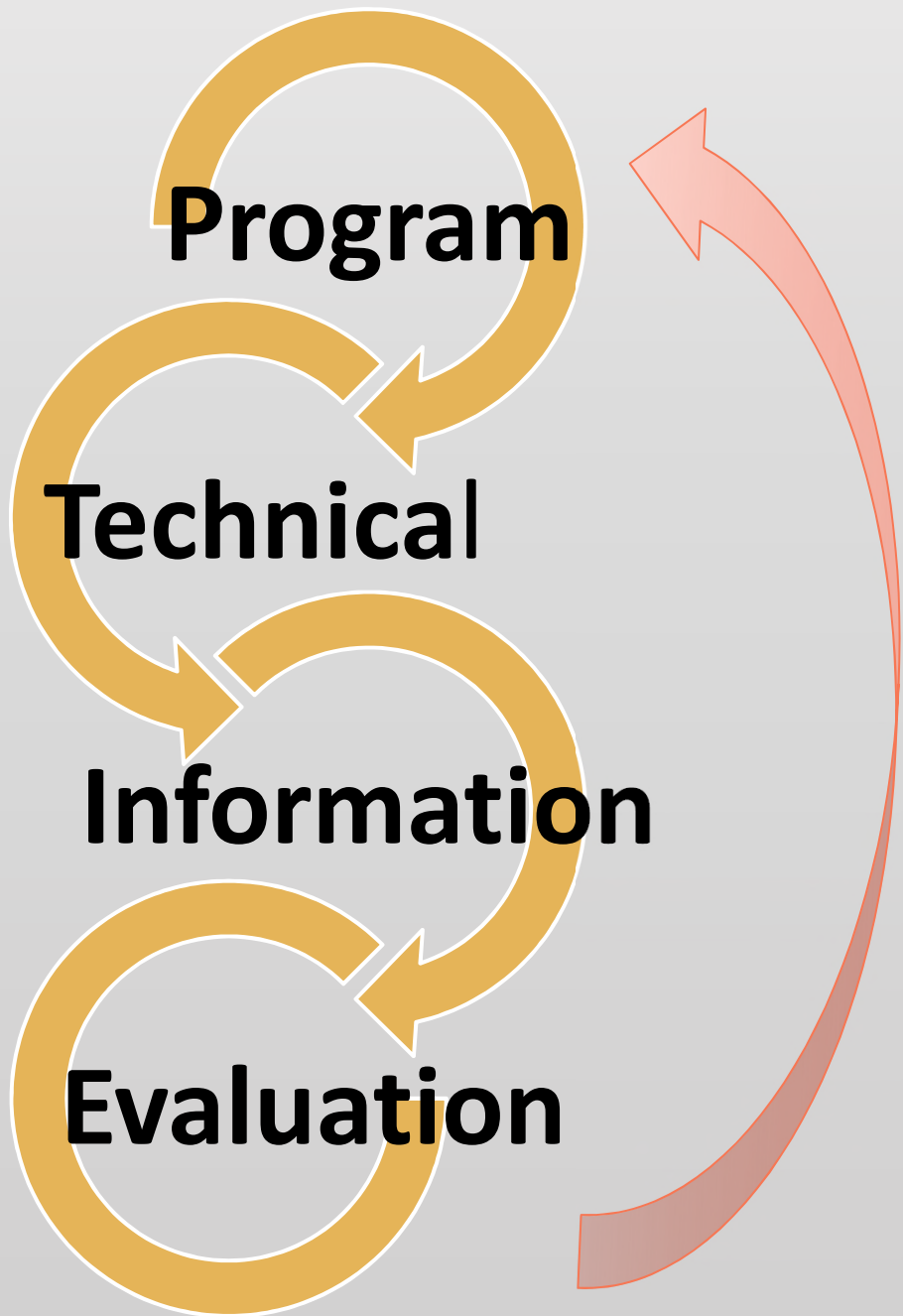
Behavior Change-Uses Met-Regulation-Policy-Health-Economy

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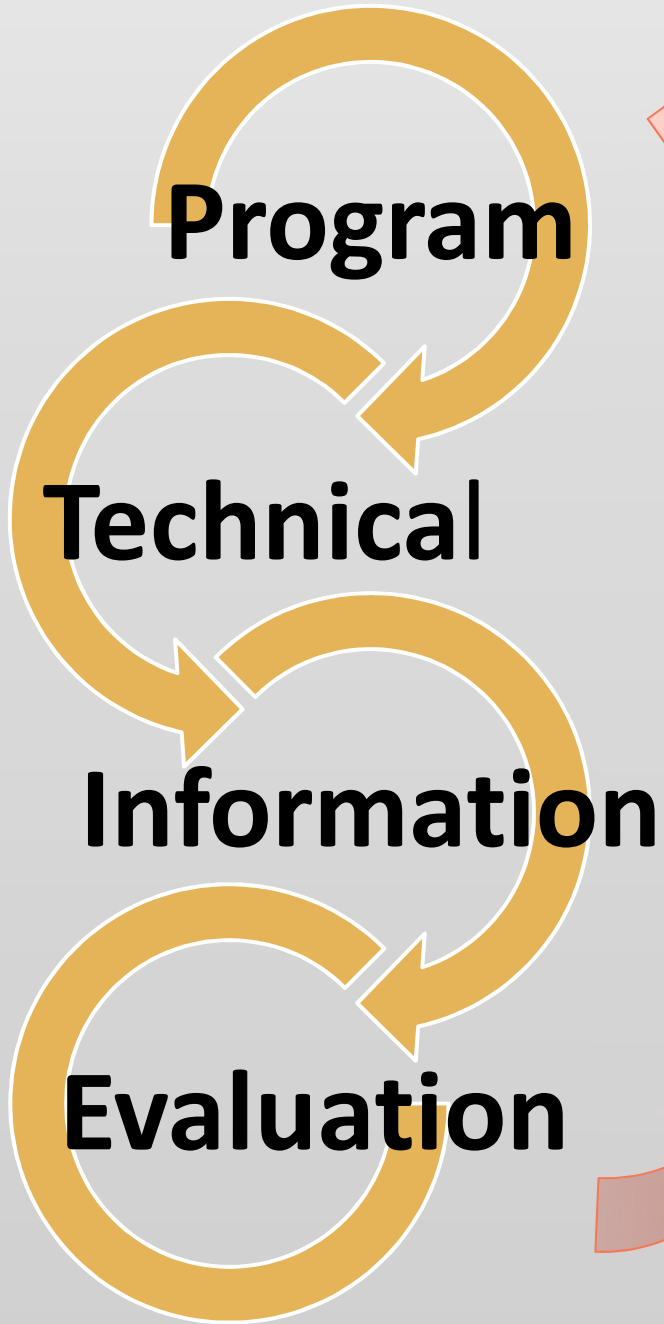
Info needs &
Products

Evaluation



**Study Design or
Monitoring Plan**

PLANNED DESIGNS THAT
COVER ESSENTIAL
BUILDING BLOCKS

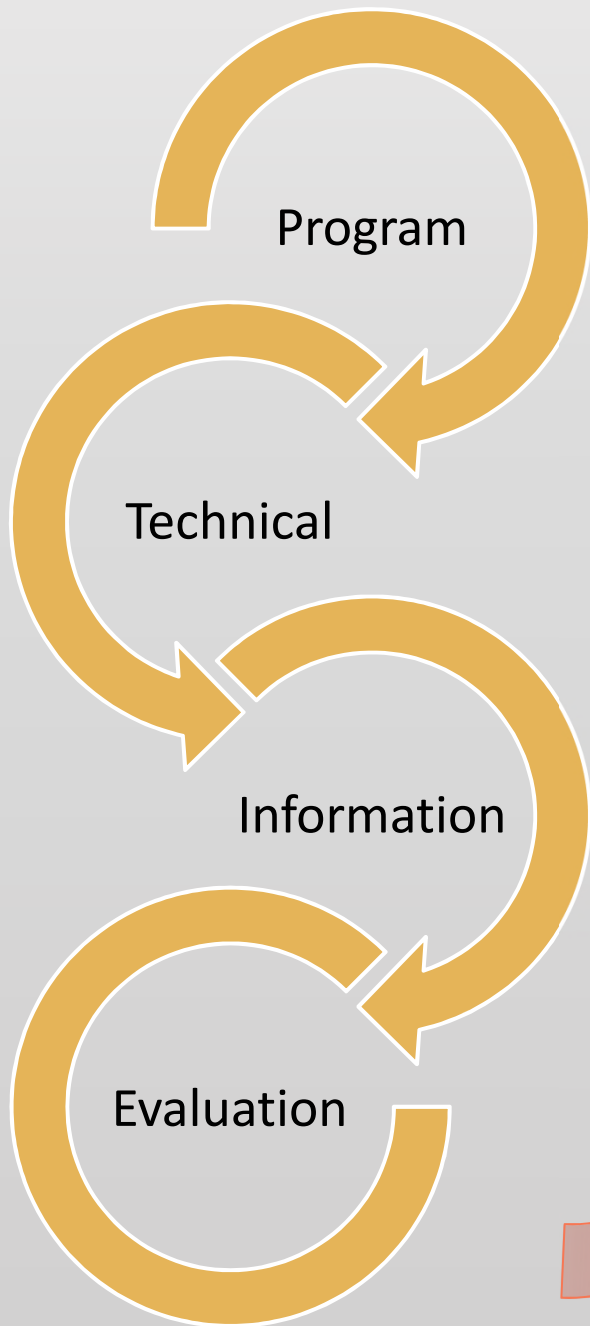


Who, Why & Info needs =
DRIVER

What, When, Where, Data
Quality & Management

Data to Info Via Analysis,
Interpretation, Reporting &
Communication

Will it Work How will You
Know?



Program Design - The Who and Why

1. Shared Vision and Outcomes

1a. Impact, Results and Value Alignment ←

1b. Who Needs to be Involved and Role

1c. Volunteer Management Program

2. Scope and Inventory

2a. Geographic and Waterbody

2b. Existing Data, Gaps and New Data Needs

2c. ID Threats and Opportunities to waterbodies

2d. Policies, Legislation & Regulation to Consider

2e. Water and Land Uses (historic, current, cultural)

2f. Benchmarks, standards and criteria (formal or informal)

Volunteer Monitoring Program should be designed to serve data objectives not visa versa

Program Design - The Who and Why Continued...

3. Monitoring **Reasons, Uses or Purposes**

3a. Role in meeting Vision, Outcomes, Organization Objectives



3b. Monitoring Questions

3c. Study Purpose



3c. Data Uses, Decisions, Management Uses



3d. Targeted **Data Users / Decision Makers** and Decisions



3e. **Identify Information Needs of Decision Makers -Data Quality**



3f. Summarize – Information Blue Print, Logic Model

4. Capacity and Prioritization Check

4a. Budget and Capacity Assessment

4b. Scalability

4c. Summarize, Document & Communicate (Blue Print, Logic Model)

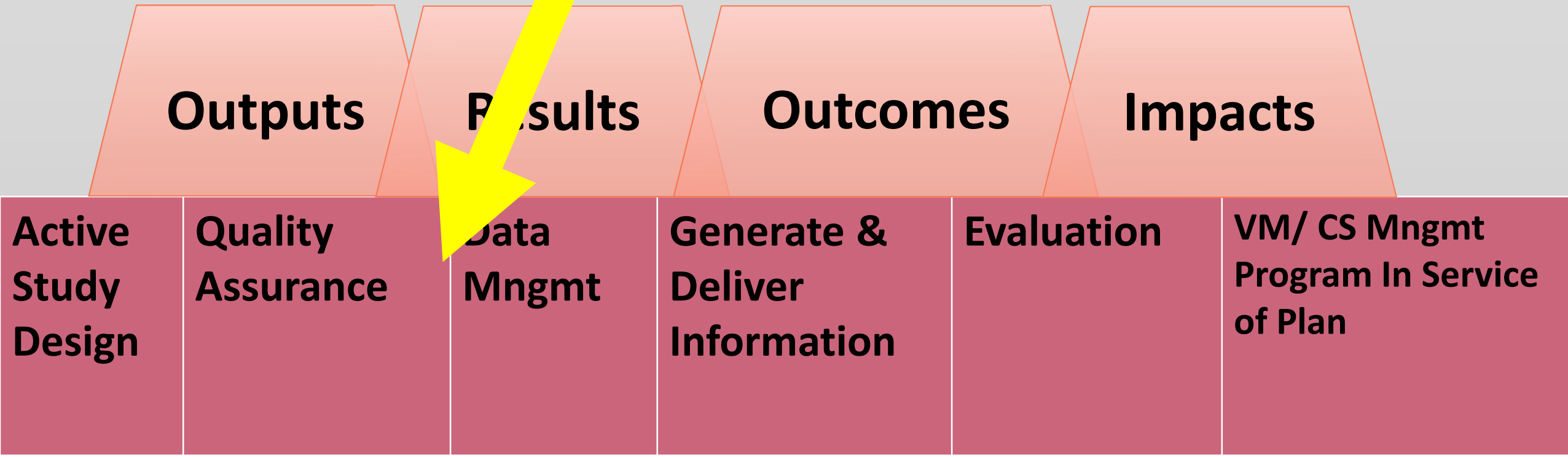
Steps for each of these four designs as well as detailed program evaluation is available if contact me at:

Barb.horn@state.co.us

EFFECTIVE MONITORING PROGRAMS

Produce Measurable, trackable or identifiable:

ESSENTIAL BUILDING BLOCKS



Who, Why & Info needs =
DRIVER

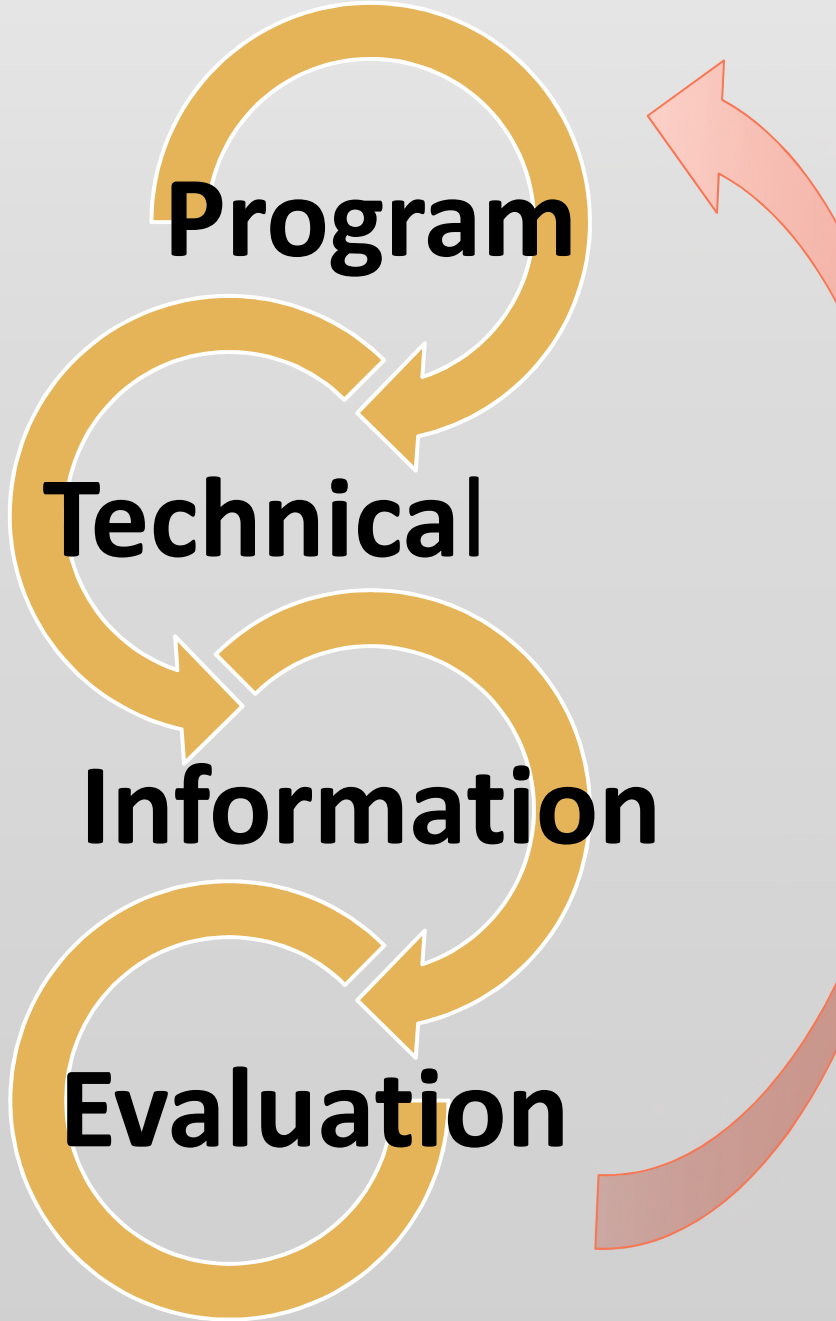
What, When, Where, Data
Quality & Management

Program

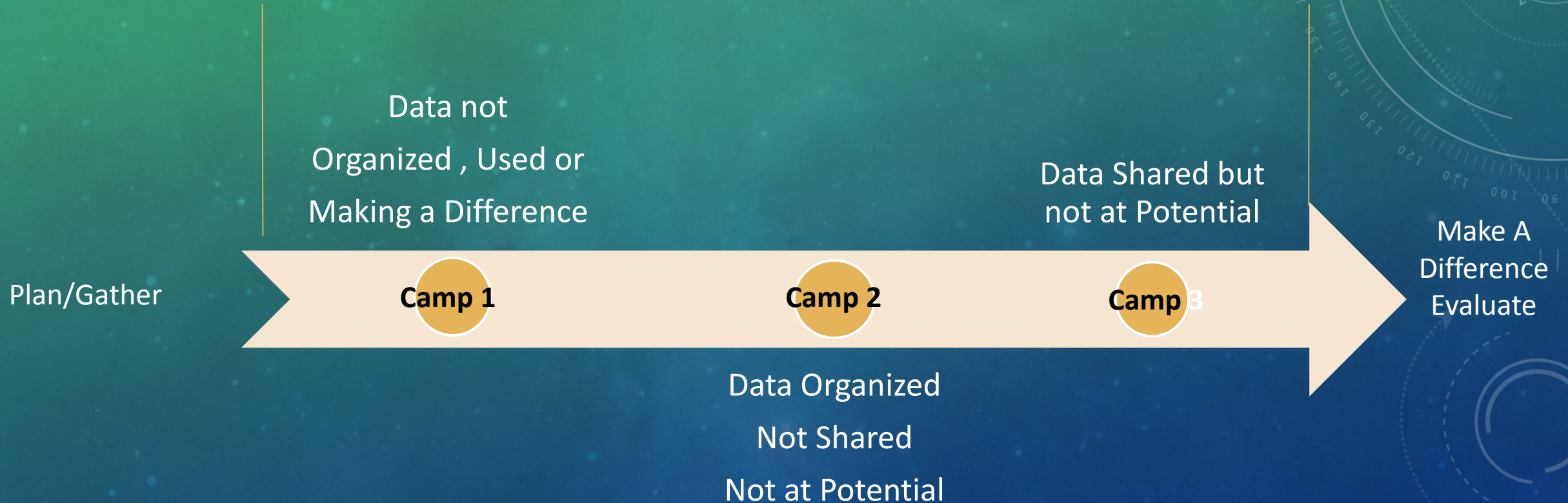
Technical

Information

Evaluation



DATA READINESS: READY TO CREATE INFORMATION PRODUCTS



EFFECTIVE MONITORING PROGRAMS

Produce Measurable, trackable or identifiable:

ESSENTIAL BUILDING BLOCKS

Outputs

Results

Outcomes

Impacts

**Active
Study
Design**

**Quality
Assurance**

**Data
Mngmt**

**Generate &
Deliver
Information**

Evaluation

**VM/ CS Mngmt
Program In Service
of Plan**

Who, Why & Info needs =
DRIVER

What, When, Where, Data
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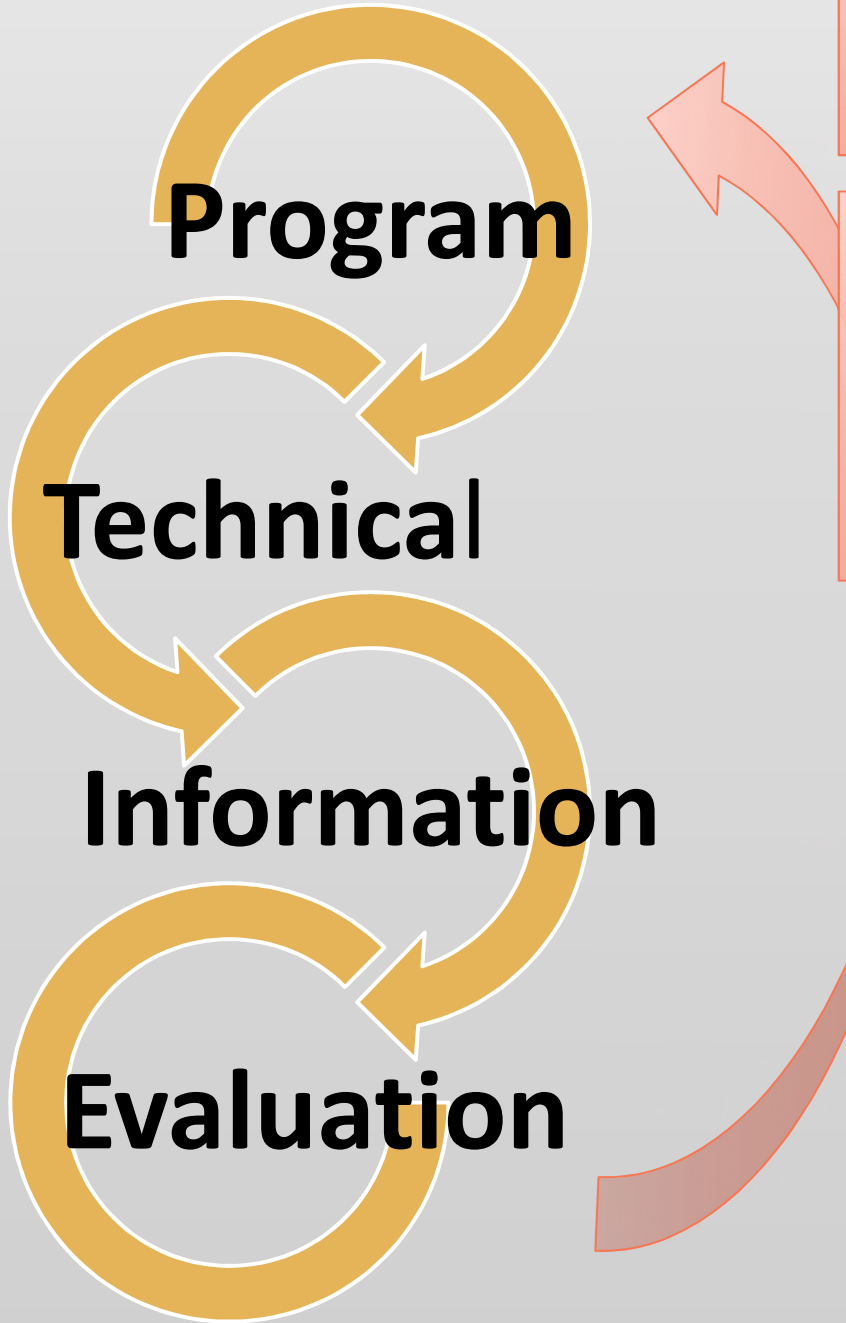
Data to Info Via Analysis,
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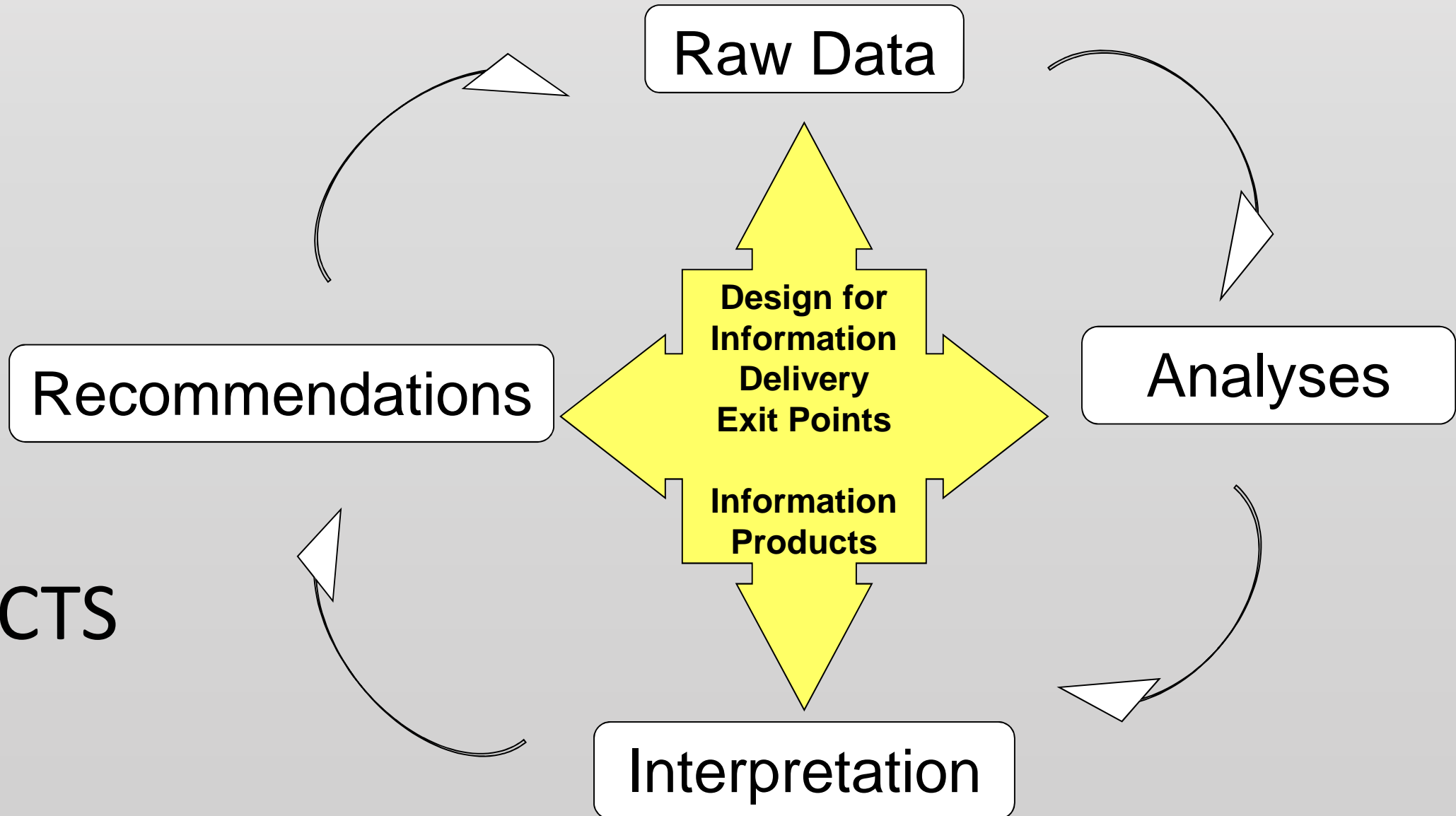
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Evaluation



IDENTIFY INFO NEEDS, INFORMATION PRODUCTS & DELIVERY..



INFO
PRODUCTS
ARE:

ASSETS =

DATA U

ME = FOR



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1. Can be found

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CAMP 2 – WHAT MAKES DATA AN ASSET A “FOREVER SONG”

1. Plan for it to be in Study Design
2. Manage Raw Data and Information Products
3. Document Data Management
4. Delivery & Communicate Info / Document
5. Publish Data to Shared Portals (> than your website)
6. Evaluate, adjust and document monitoring program

Technical Design - The What, When, Where, Data Quality & Management

5. What Monitor

5a. Waterbody type

5b. Activity Media

5c. Methods and Equipment to meet Data Quality Objectives

6. Where Monitor

7. When Monitor

8. How fulfill Data Quality Objectives (SOP, QAPP)

9. Who is Collecting, Processing and Analyzing

10. Access, Transportation & Safety

11. Manage Raw Data to Verified Data (Data Management Plan)

12. Capacity and Prioritization Check (Budget, Scalability, Document &

Information Design - Data to Information through Analyses, Interpretation, Reporting & Communicating

13. **Identify Information Products Needed** by Targeted Decision Makers

14. Data Analyses & Summary

15. Interpretation, Conclusions & Recommendations

16. **Communication and Delivery** (Communication Plan)

17. **Data Management of Information Products** (Data Management Plan)

18. **Who** and Support

19. Capacity and Prioritization Check (Budget, Scalability, Document & Communicate)

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Evaluation Design- Will it Work and How Will I know?

20. **Final Study Design**, Task and Timeline, Budget, Capacity and Scalability, **Sub Documents**
21. **How answer Monitoring Questions?**
22. **Evaluation of Effectiveness, Plan & Implementation**
23. **How Capture and Document Success, Changes & Story**
24. **Communication of Plan**, Results, Outputs, Outcomes, Impact & What needs to be done
25. Acknowledgement

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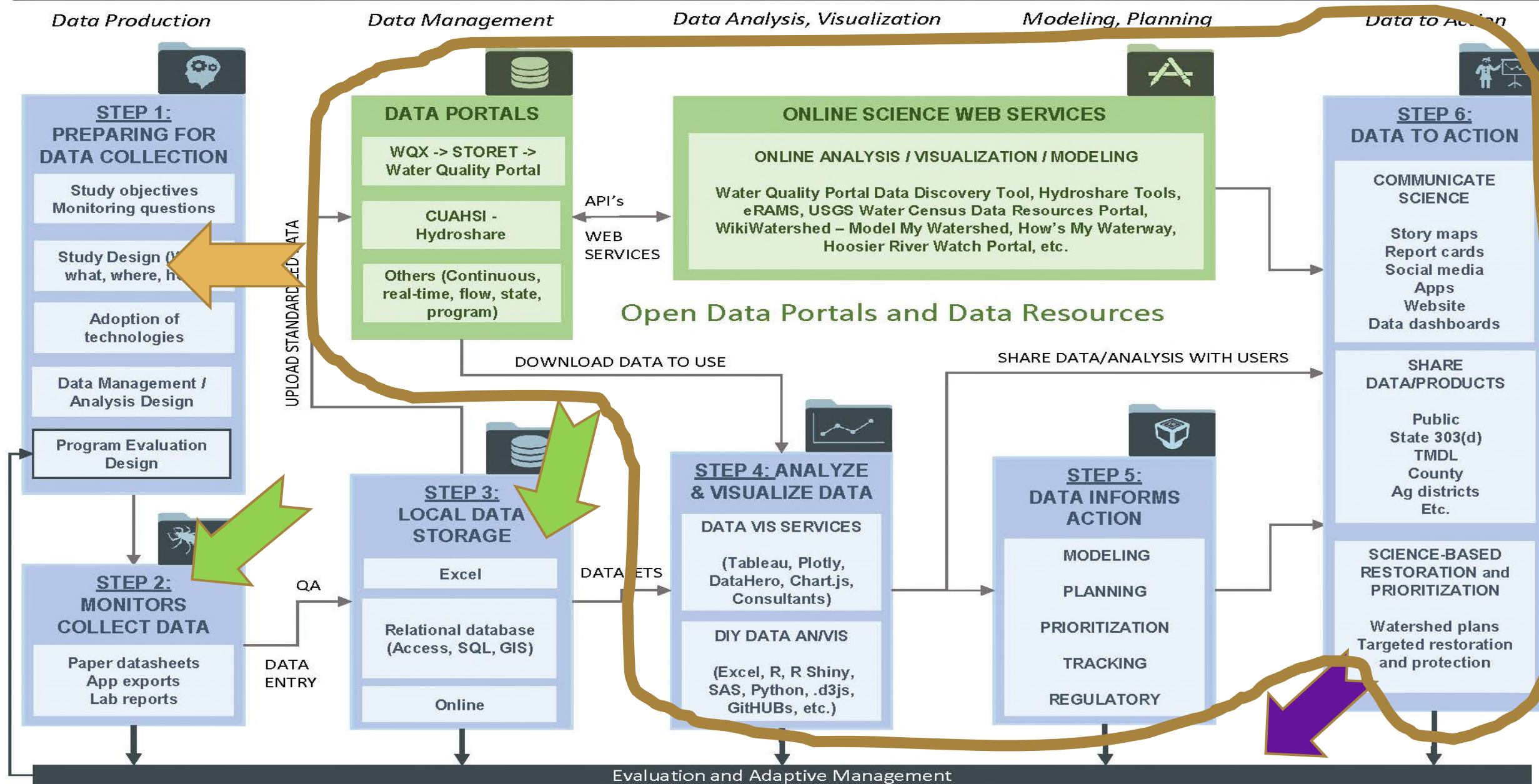
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Program In Service
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A Citizen Water Science Framework: *Powered with Open Data and Technologies*



SPIT BATH ASSESSMENT Monitoring Design

What Are
Your
Expectations
(Reference
Conditions)?



What Are
Current
Conditions?



How Do Current
Conditions
Compare with
Expectation?

Impairment



Restoration

High Quality



Protection

TYPE OF INVESTIGATION = PURPOSE/USE/REASON:

Condition Trend	Impact	Effectiveness	Use Support
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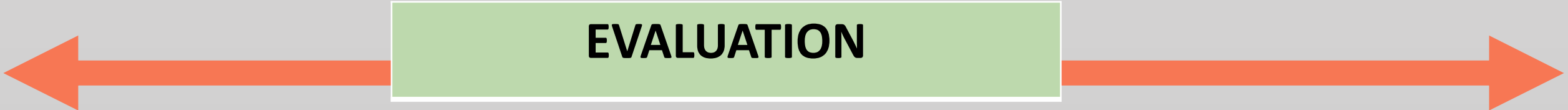
COMMUNITY OR AGENCY: USERS

Education Inquiry	Engagement	Advocacy	Planning	Regulatory	Legal Compliance
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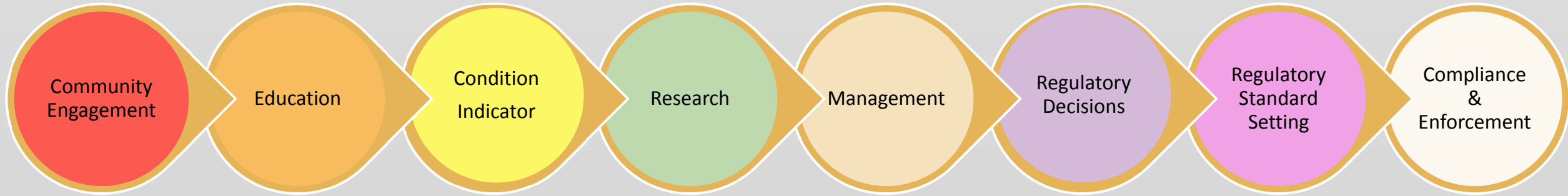
DELIVERED INFORMATION PRODUCT

Raw Data	Report Card	Report	Story Board	Map	Warning
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EVALUATION



UNIVERSAL ACROSS DATA USE/?/PURPOSE:





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Waterdatacollaborative.org

THANK YOU!